

## **DAO (AUTOCAD) (60 PERIODS)**

### **CHAPTER 1 INTRODUCTION TO AUTOCAD FEATURES**

#### **Learning objectives**

After completing this chapter, the student will be able to:

- Describe the AutoCAD screen layout and user interface.
- Describe the function of dialog boxes.
- Use the keyboard and an input device to select commands, enter text, and pick locations on the screen.
- Define the use of function, and shortcut keys.

#### **Contents**

- 1.1 Starting AutoCAD
  - 1.1.1 AutoCAD 2009 – 2010 Icon.
  - 1.1.2 Start-programs menu- AutoCAD 2009.
  - 1.1.3 Workspace, switching:
    - 1.1.3.1 2D Drafting and Annotation.
    - 1.1.3.2 AutoCAD Classic.
- 1.2 The AutoCAD Graphics Windows.
  - 1.2.1 The standard AutoCAD graphics windows.
    - 1.2.1.1 Menu bar.
    - 1.2.1.2 Floating toolbar.
    - 1.2.1.3 Coordinate display.
    - 1.2.1.4 Standard toolbar.
  - 1.2.2 Command Exit and application.
- 1.3 Selecting AutoCAD commands.
  - 1.3.1 Using the command line.

## **CHAPTER 2**

### **STARTING AND SETTING UP DRAWING**

#### **Learning Objectives**

After completing this chapter, the student will be able to:

- Start a drawing from scratch.
- Use the units and limits commands to change drawing settings.
- Open an existing drawing.

#### **Contents**

- 2.1 Starting a New Drawing:
  - 2.1.1 Open a drawing.
  - 2.1.2 Start from scratch.
- 2.2 Using the Quick setup wizard.
  - 2.2.1 Setting units of measure:
    - 2.2.1.1 Decimal.
  - 2.2.2 Setting the drawing Area.
    - 2.2.2.1 The Model space.
- 2.3 Using the Advanced setup wizard.
  - 2.3.1 Units.
  - 2.3.2 Angle.
  - 2.3.3 Angle measure.
- 2.4 Changing Drawing settings
  - 2.4.1 Changing Units: Format →limits or command : Limits.
- 2.5 Opening an Existing Drawing.
- 2.6 Tools: Drafting Settings:
  - 2.6.1 Snap and Grid Adjusting.
  - 2.6.2 Snap type (Rectangular and Isometric)

## **CHAPTER 3**

# **DRAWING LINES, ERASING OBJECTS, USING LAYERS, AND MAKING PRINTS**

### **Learning objectives**

After completing this chapter, the student will be able to:

- Use a variety of line types to construct an object.
- Use the Ortho mode and polar tracking.
- Use direct distance entry.
- Make revisions to objects using the ERASE command and its options.
- Remove and add objects to the selection set; Redraw, Oops, Undo.
- Draw objects on separate layers using the LAYER command.

Use the Properties window to change layers, colors, line types, and line weights.

### **Contents**

#### **3.1 Drawing lines with AutoCAD.**

##### **3.1.1 Point entry methods.**

##### **3.1.1.1 Using absolute coordinates.**

##### **3.1.1.2 Using relative coordinates.**

##### **3.1.1.3 Using polar coordinates.**

##### **3.1.1.4 Picking points using the screen cursor.**

##### **3.1.2 Drawing tin ortho mode.**

##### **3.1.3 Using direct distance entry.**

##### **3.1.4 Using snap and Grid in drawing lines.**

#### **3.2 Introduction to editing.**

##### **3.2.1 Using the erase command.**

##### **3.2.1.1 Making a single selection automatically.**

##### **3.2.1.2 Using the last selection object.**

##### **3.2.1.3 Using the window selection option from left to right.**

##### **3.2.1.4 Using the crossing selection option from right to left.**

##### **3.2.2 Using the oops command.**

##### **3.2.3 Using the U command.**

##### **3.2.4 Using the previous selection.**

##### **3.2.5 Selecting all objects in a drawing.**

#### **3.3 An introduction to layers.**

#### **3.4 Introduction to the layer command.**

##### **3.4.1 Creating layers.**

##### **3.4.2 Deleting layers.**

##### **3.4.3 Setting the current layer.**

##### **3.4.4 Viewing the status of layers.**

##### **3.4.4.1 Changing the layer name.**

##### **3.4.4.2 Tuning layers on and off.**

##### **3.4.4.3 Thawing and freezing layers.**

##### **3.4.4.4 Unlocked and locked layers.**

##### **3.4.4.5 Layer color.**

##### **3.4.4.6 Layer line type.**

- 3.4.4.7 Layer line weight.
  - 3.4.4.8 Layer plot styles.
  - 3.4.4.9 Layer plot / no plot.
- 3.4.5 Working with layers.
  - 3.4.5.1 New layer.
  - 3.4.5.2 Select all.
  - 3.4.5.3 Clear all.
  - 3.4.5.4 Select all but current.
  - 3.4.5.5 Invert selection.
- 3.4.6 Setting the layer color.
- 3.4.7 Setting the layer line type.
  - 3.4.7.1 AutoCAD line types.
  - 3.4.7.2 Changing line types assignments.
  - 3.4.7.3 Managing line types.
  - 3.4.7.4 Changing line weight assignments.
  - 3.4.7.5 Setting the current line weight.
    - 3.4.7.5.1 Line weights.
    - 3.4.7.5.2 Display line weight.
    - 3.4.7.5.3 Adjust display scale.
    - 3.4.7.5.4 Current line weight.
- 3.4.8 Quickly setting a layer current.
- 3.4.9 Making the layer of an existing object current.
- 3.7 Changing object properties.

## **CHAPTER 4**

### **DRAWING BASIC SHAPES**

#### **Learning objectives**

After completing this chapter, the student will be able to:

- Draw circles using the circle command.
- Draw arc using the ARC command options.

#### **Contents**

##### **4.1 Drawing circles.**

- 4.1.1 Drawing a circle by radius.
- 4.1.2 Drawing a circle by diameter.
- 4.1.3 Drawing a two-point circle.
- 4.1.4 Drawing a three-point circle.
- 4.1.5 Drawing a circle tangent to two objects.
- 4.1.6 Drawing a circle tangent to three objects.

##### **4.2 Drawing arcs.**

- 4.2.1 Drawing a three-point arc.
- 4.2.2 Drawing arcs using the start, center, end option.
- 4.2.3 Drawing arcs using the start, center, angle option.
- 4.2.4 Drawing arcs using the start, center, length option.
- 4.2.5 Drawing arcs using the start, end, angle option.
- 4.2.6 Drawing arcs using the start, end, radius option.
- 4.2.7 Drawing arcs using the start, end, direction option.
- 4.2.8 Drawing arcs using the center, start, end option.
- 4.2.9 Drawing arcs using the center, start, angle option.
- 4.2.10 Drawing arcs using the center, start, length option.

##### **4.3 Drawing ellipses.**

- 4.3.1 Drawing an ellipse using the axis, endpoint option.
- 4.3.1 Drawing an ellipse using the center option.
- 4.3.1 Drawing elliptical arcs.

##### **4.4 Drawing regular polygons.**

- 4.4.1 Setting the number of polygon sides.

##### **4.5 Drawing rectangles.**

- 4.5.1 Drawing rectangle with line width.
- 4.5.2 Drawing chamfered rectangles.
- 4.5.3 Drawing filleted rectangles.

##### **4.6 Drawing problems: exercises.**

## **CHAPTER 5**

# **OBJECT SNAP, GEOMETRIC CONSTRUCTIONS, AND MULTIVIEW DRAWINGS**

### **Learning objectives**

After completing this chapter, the student will be able to:

- Use object snap mode command options to create precision drawing.
- Use the offset command to draw parallel lines and curves.
- Divide existing objects into equal distances using the divide command.
- Use the measure command to set designated increments on an existing object.
- Use construction lines to assist in drawing multiviews and auxiliary views.

### **Contents**

- 5.1 Object snap modes.
  - 5.1.1 Endpoint object snap.
  - 5.1.2 Midpoint object snap.
  - 5.1.3 Center object snap.
  - 5.1.4 Quadrant object snap.
  - 5.1.5 Intersection object snap.
  - 5.1.6 Apparent intersection object snap.
  - 5.1.7 Extension object snap.
  - 5.1.8 Perpendicular object snap.
  - 5.1.9 Tangent object snap.
  - 5.1.10 Parallel object snap.
  - 5.1.11 Node object snap.
  - 5.1.12 Nearest object snap.
- 5.2 Setting running object snaps.
  - 5.2.1 Toggling, disabling and overriding running object snap.
  - 5.2.2 Using multiple object snap modes.
- 5.3 Drawing parallel lines and curves.
  - 5.3.1 Command: O or OFFSET.
- 5.4 Drawing points.
- 5.5 Dividing an object.
  - 5.5.1 Command: Dive or divide.
  - 5.5.2 Divide by block.
- 5.6 Dividing objects at specified distances.
  - 5.6.1 Setting point style.
- 5.7 measure command to divide the object into specific distance.
- 5.8 Drawing construction lines.
  - 5.8.1 Using the xline command.
    - 5.8.1.1 From point.
    - 5.8.1.2 Hor (H).
    - 5.8.1.3 Ver (V).
  - 5.8.2 Using the ray command.
- 5.9 Editing construction lines and rays.

## **CHAPTER 6**

### **BASIC EDITING COMMANDS**

#### **Learning objectives**

After completing this chapter, the student will be able to:

- Draw chamfers and angled corners with the chamfer command.
- Use the fillet command to draw filets, rounds, and other rounded corners.
- Remove a portion of a line, circle, or arc using the break command.
- Use the trim and extend commands to edit an object.
- Make single and multiple copies of existing objects using the copy command.
- Draw a mirror image of an object.
- Change the angular position of an object using the rotate command.
- The align command to move and rotate an object simultaneously.
- Change the size of an object using the scale command.
- Modify the length and height using the stretch and lengthen commands

#### **Contents**

- 6.1 Drawing chamfers.
  - 6.1.1 Distance.
  - 6.1.2 Setting the chamfer distance.
- 6.2 Drawing rounded corners.
  - 6.2.1 Command F or fillet.
  - 6.2.2 Setting the fillet trim mode.
  - 6.2.3 Filleting parallel lines.
- 6.3 Command br or break.
- 6.4 Trimming section of lines, circles and arcs.
  - 6.4.1 Command TR or Trim.
- 6.5 Extending lines.
  - 6.5.1 Command: ex or extend.
- 6.6 Moving an object.
  - 6.6.1 Command M or move.
  - 6.6.2 Using the first point as displacement.
- 6.7 Copying objects.
  - 6.7.1 Command Co or copy
  - 6.7.2 Making multiple copies.
- 6.8 Drawing a mirror image of an object.
  - 6.8.1 Selecting the mirror line.
  - 6.8.2 Command Mi or mirror.
  - 6.8.3 Mirroring text.
- 6.9 Rotating existing objects.
  - 6.9.1 Command ro or rotate.
- 6.10 Moving and rotating an object at the same time.
  - 6.10.1 Command AL or Align.
- 6.11 Changing the size of an object.
  - 6.11.1 Command SC or scale.

## 6.12 Stretching an object.

6.12.1 Command S or stretch.

6.12.2 Using the displacement option.



## **CHAPTER 7**

### **SAVING DRAWINGS**

#### **Learning objectives**

After completing this chapter, the student will be able to:

- Saving a drawing under a different name.
- Explain the difference between the QSAVE, SAVEAS, and SAVE commands and the automatic save.

#### **Contents**

##### 7.1 Saving drawings.

###### 7.1.1 Naming drawings.

###### 7.1.2 Using the qsave command.

###### 7.1.3 Using the save as command.

###### 7.1.4 Saving your work automatically.

###### 7.1.5 Where to save the drawing.

###### 7.1.6 Saving AutoCAD drawings as older releases.

##### 7.2 Closing a drawing.

##### 7.3 Existing AutoCAD.

## **CHAPTER 1- PHOTOSHOP**

### **PAINTING AND EDITING**

#### **Learning objectives**

After completing this chapter, the student will be able to:

- Calibrate a monitor.
- Open file.
- Work with palettes.
- View, select.
- Choose and change the foreground color.
- Sample color with the eyedropper tool.

#### **Contents**

- 1.1 Opening a file.
- 1.2 Working with palettes.
  - 1.2.1 Display a palette.
  - 1.2.2 Moving and using palettes.
  - 1.2.3 Hiding and collapsing palettes.
  - 1.2.4 Reorganizing palettes.
- 1.3 Preparing the work area.
  - 1.3.1 Opening another file.
  - 1.3.2 Setting up the palettes.
  - 1.3.3 Displaying the rulers.
- 1.4 Using the painting and editing tools.
- 1.5 Using the eraser tool.
- 1.6 Using the foreground and the background colors.
- 1.7 Creating a new brush.
- 1.8 Changing the brush opacity.
- 1.9 Using the picker / swatches / scratch palettes.
  - 1.9.1 Choose a color from the swatches palette.
  - 1.9.2 Reorganizing the picker / swatches / scratch palette.
  - 1.9.3 Separate a palette.
  - 1.9.4 Mixing a new color.
    - 1.9.4.1 Select a color.
    - 1.9.4.2 Mix a color.
  - 1.9.5 Adding a color to the swatches palette.
- 1.10 Save a file as:
  - 1.10.1 Format JPEG
  - 1.10.2 Format PSD

## **CHAPTER 2 – PHOTOSHOP**

### **WORKING WITH SELECTIONS**

#### **Learning Objectives**

After completing this chapter, the student will be able to:

- Use the marquee and magic wand selection tools.
- Magnify and around in an image.
- Copy and paste a selection.
- Clone areas using the rubber stamp tool.
- Fill a selection with a color and a pattern.
- Crop an image.
- Fill a selection with a gradient.
- Add type with the type tool.

#### **Contents**

- 2.1 Beginning the lesson.
  - 2.1.1 Opening your working file.
- 2.2 Working with selections.
  - 2.2.1 Making a selection.
  - 2.2.2 Making an area-based selection.
    - 2.2.2.1 Select the image.
  - 2.2.3 Duplicating a selection.
  - 2.2.4 Making a color- based selection.
  - 2.2.5 Zooming out in an image.
  - 2.2.6 Using zoom shortcuts.
- 2.3 Cropping an image.
- 2.4 Copying a selection from one file to another.
  - 2.2.4.1 Copy the selection.
  - 2.2.4.2 Floating selections and layers.
- 2.5 Using the rubber stamp tool.
  - 2.2.6.1 Clone the image.
- 2.6 Filling a selection.
- 2.7 Filling with a pattern.
- 2.8 Creating a gradient fill.
- 2.9 Merging layers.
  - 2.9.1 Deleting layers.
- 2.10 Making selections in a layer
- 2.11 Saving the file with layers.
  - 2.11.1 Flattening layers.